Background Document

For Proposed Amendments To

301 CMR 41.00
Toxic or Hazardous Substance List

Regulatory Authority:
M.G.L. Chapter 21I, §§ 4, 9

September 2011

I. INTRODUCTION

The Executive Office of Energy and Environmental Affairs (EEA), as chair of the Administrative Council on Toxic Use Reduction (TUR), is proposing to amend the Toxic or Hazardous Substance List regulations, (301 CMR 41.00), to implement decisions made by the Administrative Council in fiscal year 2011, pursuant to its duties under the Toxics Use Reduction Act (TURA, M.G.L. c. 21I, as amended in July 2006). Specifically, the Council voted to 1) list 16 chemicals that the United States Environmental Protection Agency (USEPA) added to the Toxic Chemical List under the Emergency Planning and Community Right to Know Act (EPCRA) section 313 on November 30, 2010; 2) designate formaldehyde as a Higher Hazard Substance; and 3) create a separate category specifically for hexavalent chromium compounds, and to designate hexavalent chromium compounds as Higher Hazard Substances.

II. BACKGROUND

Originally enacted in 1989, TURA requires certain facilities to report their use of toxic chemicals and examine ways to decrease their use and the wastes generated from use, with the goal of protecting public health, the environment, and workers, while helping business's manufacturing operations to become more efficient and globally competitive.

TURA committed Massachusetts to reduce toxic byproducts (meaning all varieties of non-product output resulting from the use of a toxic chemical, such as air emissions, water discharges, and hazardous wastes). Since 2000, the TURA program has helped Massachusetts businesses to reduce toxics use by 21% and toxic byproducts by 38%[1], reducing chemical transportation risks, workplace hazards, and toxics in products, while helping Massachusetts businesses remain competitive in a global marketplace increasingly aware of toxics issues.

From its inception, TURA established an Administrative Council on Toxics Use Reduction that has the responsibility, among other duties, to make adjustments to the Toxic or Hazardous Substance List. As the chair of the Council, the Secretary of EEA promulgates the Council's actions in regulations.

TURA was amended on July 28, 2006, by "An Act Amending the Toxics Use Reduction Act" (Chapter 188 of the Acts of 2006). The 2006 TURA amendments provided for the careful review of the Toxic or Hazardous Substance List that triggers regulatory coverage under TURA when facilities use greater than threshold amounts of chemicals on the list. Specifically, it directed the Administrative Council to consider whether chemicals should be designated as higher or lower hazard substances. This regulatory package implements the actions taken by the Administrative Council during fiscal year 2011 affecting the TURA list of reportable chemicals.

[1] Measured using 2009 data normalized for changes in production reported by a core group of industries that have been subject to reporting since 2000.

III. DESCRIPTION OF THE PROPOSED REGULATIONS

A. Toxic or Hazard Substance List, 301 CMR 41.00

1. Addition of 16 Chemicals to EPCRA section 313

When USEPA makes changes to the Toxic Chemical List used to compile the national Toxics Release Inventory under EPCRA section 313 (the "EPCRA list") the TURA program is required by statute (M.G.L. c. 21I, § 9 (A)) to adjust the TURA Toxic or Hazardous Substance List (301 CMR 41.00) consistent with the changes made by USEPA to the EPCRA list.

On November 30, 2010, the USEPA added 16 chemicals to the EPCRA list. Specifically, four of the chemicals were added to the polycyclic aromatic compounds (PACs) category on the list, and 12 chemicals were individually listed. Three of the 16 chemicals added (furan, isoprene, and tetranitromethane) were on the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) and are currently reportable under TURA - they were retained by the Administrative Council in 2009 as part of a review of the CERCLA chemical list required by the 2006 amendments to TURA.

All sixteen chemicals have been classified by the National Toxicology Program (NTP) as "reasonably anticipated to be a human carcinogen." The USEPA has concluded, based on a review of available studies, that these 16 chemicals could cause cancer in humans and therefore meet the statutory listing criteria of EPCRA. The action is part of USEPA's ongoing efforts to provide more complete information on toxic chemical releases, and it is the first expansion of the list of reportable chemicals in over a decade.

EPA estimates the additions will affect 175 companies nationwide. The Massachusetts Department of Environmental Protection (MassDEP) estimates the sixteen chemicals added are not used in significant quantities in the Commonwealth and will most likely not impact any Massachusetts business. Guidance and other outreach documents will include specific information to ensure Massachusetts facilities receive adequate notice of their incorporation and clear instructions for reporting. The 16 EPRCA chemicals to be added to TURA Toxic or Hazardous Substance List at [301 CMR 41.03(8)] include the following:

Individual Listings

CAS #	Chemical Name
81-49-2	1-Amino-2,4-dibromoanthraquinone
3296-90-0	2,2-bis(Bromomethyl)-1,3 propanediol
110-00-9	Furan
556-52-5	Glycidol
78-79-5	Isoprene

93-15-2	Methyleugenol
91-23-6	o-Nitroanisole
75-52-5	Nitromethane
77-09-8	Phenolphthalein
116-14-3	Tetrafluoroethylene
509-14-8	Tetranitromethane
75-02-5	Vinyl Fluoride

Polycyclic Aromatic Compounds (PACs) category

CAS#	Chemical Name
42397-64-8	1,6-Dinitropyrene
42397-65-9	1,8-Dinitropyrene
7496-02-8	6-Nitrochrysene
57835-92-4	4-Nitropyrene

2. Higher Hazard Designations

When first enacted, TURA did not differentiate toxics according to their level of hazard. The 2006 statutory amendments gave the Council authority, in consultation with the Toxics Use Reduction Institute (TURI) and the Science Advisory Board (SAB), to designate a toxic substance as higher hazard or lower hazard, or to leave the substance uncategorized. For a higher hazard substance, the threshold for reporting is lowered to 1,000 pounds, (from 10,000 or 25,000 pounds), and the Council has authority to further lower the reporting threshold. Persistent, bio-accumulative, and toxic chemicals (PBTs) are automatically designated as higher hazard substances, (and already have reporting thresholds lower than 1,000 pounds, as established by the USEPA). For a lower hazard substance, the "per chemical" fee is eliminated.

The following is the process for designating higher hazard and lower hazard substances:

1. The SAB reviews the scientific data and recommends designations;
2. TURI prepares a policy analysis of the recommended designations for the Council's consideration in consultation with the Massachusetts Office of Technical Assistance (OTA) and MassDEP;
3. The TURA Advisory Committee reviews the recommendations;
4. The Council takes action on the recommended designations;
5. EEA promulgates the Council's action in 301 CMR 41.00;
6. The designations take effect in the calendar year after the year the designations are promulgated in 301 CMR 41.00.

Prior to these proposed regulations, the Administrative Council designated trichloroethylene, cadmium, and cadmium compounds as higher hazard substances beginning with reporting year

2008, and designated perchloroethylene as a higher hazard substance beginning with reporting year 2009.

The Council also designated three substances as lower hazard substances beginning with reporting year 2009: isobutyl alcohol, sec-butyl alcohol, and n-butyl alcohol. Beginning in reporting year 2010 the Council designated an additional seven chemicals as lower hazard substances: butyl acetate, iso-butyl acetate, ferric chloride, ferrous chloride, ferric sulfate, ferrous sulfate, and ferrous sulfate heptahydrate.

The proposed regulations would designate formaldehyde (CAS 50-00-0) and hexavalent chromium compounds as Higher Hazard Substances. In making its decision to designate both hexavalent chromium compounds and formaldehyde as Higher Hazard Substances, the Council relied on the recommendation of the SAB, TURI's policy analysis, and the comments of the Advisory Committee.[2,3] The chemicals have acute and chronic health effects on humans and are both classified by the International Agency for Research on Cancer (IARC) as Group 1 (carcinogenic to humans). In the case of formaldehyde, the Council also considered the findings of the National Academy of Sciences (NAS) review of the USEPA draft toxicological review of formaldehyde that was released on April 8, 2011.[4] In its report, the NAS supported the conclusion of the USEPA regarding formaldehyde and nasopharyngeal cancer in humans, specifically, that there is sufficient evidence of a causal association between formaldehyde and cancers of the nose, nasal cavity, and nasopharynx.

IV. Impacts of Proposed Revisions

A. Economic Impacts – 16 Chemicals added to EPCRA section 313

The Massachusetts Department of Environmental Protection (MassDEP) estimates the 16 chemicals added are not used in significant quantities in Massachusetts and will most likely not affect any facility in the Commonwealth.

B. Economic Impacts – Formaldehyde

During 2008, nine TURA filers reported use of formaldehyde. Three filers were in the resin manufacturing sector, and two were in the custom papers sector. There was one company each from the gas production and/or distribution sector, chemical distribution, electroless copper metal finishing, and the embalming chemicals sector.

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[2] Toxic Use Reduction Institute Summary of Policy Analysis, Recommendation to separate hexavalent chromium compounds form chromium compounds category (MassDEP Category 1012) and recommendation to designate hexavalent chromium compounds as Higher Hazard Substances, March 28, 2011.

[3] Toxic Use Reduction Institute Summary of Policy Analysis, Higher Hazard Substance Designation Recommendation: Formaldehyde (CAS #50-00-0), May 30, 2011.

[4] Review of the Environmental Protection Agency's Draft IRIS Assessment of Formaldehyde. Available at http://www.nap.edu/catalog.php?record_id=13142.

To estimate the potential number of facilities that would be affected by the lower 1,000 pound reporting threshold, the TURA program used information provided by past and present TURA filers, as well as additional information from the sources listed below:

- EPA's TIER II database and MassDEP's Hazardous Air Pollutants database demonstrate few potential new filers.
- OTA staff estimate that the facilities very likely to still be processing or using formaldehyde are in sectors 2295 (coated fabrics), 2672 (coated and laminated paper), and 2899 (chemicals and resins manufacturing).

Formaldehyde use is far more prevalent in universities, hospitals, mortuaries and certain applications such as sterilization of barbers' tools. However, these facilities are not subject to TURA requirements.

Based on the information above, TURA program staff members estimate that a small number of facilities (fewer than 5 each) might be expected to file in the sectors of coated fabrics, custom papers and chemicals manufacturing. One or two filers in other sectors with historical use of formaldehyde may also be affected by the lowered reporting threshold. In total, the TURA program estimates that between 10 and 25 facilities would be required to file under TURA.

The cost associated with annual reporting to MassDEP consists of a base fee and a per-chemical fee. The base fee depends on the size (number of employees) of the facility; the per-chemical fee is the same for all facilities, and is set at $1100. Small businesses (companies with less than 10 employees) are specifically not covered and do not report to TURA. If a facility were already a TURA filer, then reporting on a higher hazard chemical would simply add $1100 to the amount already paid by that facility. If they are not currently covered by TURA, then the fees associated with reporting a higher hazard chemical are as follows:

Number of employees	**Base fee**	**Base fee + one chemical**
10-50	$1,850	$2,950
50-100	$2,775	$3,875
100-500	$4,625	$5,725
> 500	$9,250	$10,350

Because newly reporting facilities are likely to be smaller facilities that have not previously reported, or are using between 1,000 and 10,000 pounds, the fees associated with annual reporting are anticipated to be either $2,950 or $3,875 for a typical new facility using a higher hazard chemical.

Companies will also incur costs associated with TUR report and plan preparation. Facilities will incur larger preparation costs the first time they file a Form-S with the MassDEP and prepare a toxics plan, than they will in subsequent reporting and planning years. OTA is mandated to assist first-time filers, and its services are provided at no charge. Covered facilities may take advantage of OTA's assistance to mitigate these first-time costs, and OTA will be reaching out to new filers to offer its assistance. As companies adjust to the routine of TUR reporting, the cost of implementation declines.

Requirements to carefully track and report on toxics use have been shown to have many benefits. Companies identify losses and inefficient uses, and save by reducing purchases and eliminating unnecessary waste generation, air emissions, and waste discharges. Levels of volatile chemical emissions in workplace environments are reduced, leading to better working conditions, which is associated with higher productivity.

After two years of reporting toxics use, companies are required to engage in TUR planning. It is expected that some companies will learn about options for reducing formaldehyde use, and some companies will reduce their use to the extent that they will no longer be covered by the law. Those that have not will have to qualify inhouse staff to certify the plan, or pay an outside TUR planner to review and certify the plan. If a company has many chemicals, plan preparation using an outside consultant can cost about $5,000, but for companies that only need to report formaldehyde the cost of hiring a planner will likely be in the range of $1,000 - $3,000. Companies that want to have their own in-house TUR planner can qualify by either relying on past work experience in toxic use reduction or will have to pay for training. Those companies with experienced staff can become certified for as little as $100 and those that want staff to take a course it will cost between $650- $2000 depending on whether the company has previously filed a TURA report. Companies with in-house toxics use reduction planners will likely reap ancillary benefits from having an employee on staff who is knowledgeable about methods for reducing the costs and liabilities of toxics use.

It's important to note that companies are not required to implement specific TUR alternatives identified in their plan. Program evaluation has shown they are likely to adopt and implement many options that have a positive economic benefit. The 1997 TURA program evaluation found that in the first five years of TURA, the program produced a net economic benefit for the regulated community and the Commonwealth as a whole. Compliance costs for all firms totaled $67.4 million; as a result of planning companies chose to make capital investments totaling $37 million; and savings in operating costs totaled $120.3 million (all figures in 2007 dollars). Follow-up with companies, case studies, presentations at events, and other information received from companies covered by TURA have repeatedly confirmed that being subject to the TURA requirements has frequently led to the implementation of projects that have reduced costs and improved product and operations. It is likely that some, if not all, companies new to the TURA program will realize some economic benefits as result of being required to track chemical use, and examine alternatives to current toxics use.

C. Economic Impacts – Hexavalent Chromium Compounds

As of 2008, only eight companies filed for chromium compounds. Based on input from TURA program personnel and industry experts it is expected that a total of approximately 20 facilities would begin filing under TURA as a result of a higher hazard designation for hexavalent chromium compounds. The following information was used by the TURA program to develop the estimate of new filers:

SIC Code	**Sector**	**Number expected to report**
3087 and	Custom compound purchased resins	1-5

2816	and inorganic pigments	
3089	Plastics products, not elsewhere classified	1-5
3471	Plating and Polishing/surface finishing	10-35

In the resins, pigments and plastics sectors, the program staff estimated that a small number of the many Massachusetts companies in that industry use hexavalent chromium compounds in colorants over the 1,000 pound threshold, resulting in the potential for 1-5 new filers. In addition, a number of plating and surface finishing companies may use hexavalent chromium compounds above 1,000 lbs/year. Other estimates in the table above are based on the use of chromium in niche applications in the relevant industries.

As shown in the table above, the industry sectors in which new filers are most likely to be found are SICs 3087 and 2816 (Custom Compounded & Plastic Resins), SIC 3089 (Plastic Products), and SIC 3471 (Plating and Polishing). Other SIC codes are expected to be minimally affected. An industry expert estimated that a total of about 35 facilities would be likely to be using more than 1,000 pounds per year of hexavalent chromium compounds. The representative did not provide estimates on the likely number of employees at these facilities (only companies with more than 10 Full Time Equivalents, (FTEs), can be covered). The representative noted that a large number of additional facilities are likely to have the capacity to use hexavalent chromium compounds on an as-needed basis, but would be using smaller amounts of the substance (one hundred to several hundred pounds per year).

Because some users may have fewer than ten FTEs, the TURA program estimates a total of approximately 20 of these facilities would begin filing under TURA as a result of a higher hazard designation for hexavalent chromium.

The cost associated with annual reporting to MassDEP consists of a base fee and a per-chemical fee. The base fee depends on the size (number of employees) of the facility; the per-chemical fee is the same for all facilities, and is set at $1100. If a facility were already a TURA filer, then reporting on a higher hazard chemical would simply add $1100 to the amount already paid by that facility. If they are not currently covered by TURA, then the fees associated with reporting a higher hazard chemical are as follows:

Number of employees	**Base fee**	**Base fee + one chemical**
10-50	$1,850	$2,950
50-100	$2,775	$3,875
100-500	$4,625	$5,725
> 500	$9,250	$10,350

There would be some additional cost to companies that would begin reporting hexavalent chromium compounds based on the lower reporting thresholds. Most of the new filers would likely be facilities with fewer than 50 employees. The base fee for this size facility is $1,850. Some filers would not be new to the program and already pay a base fee, but would potentially pay an additional per-chemical fee of $1,100. Therefore the fees due from the typical new filer will either be $1,100 or $2,950.

It is also possible that creating a separate hexavalent chromium compounds from the larger category of chromium compounds could lead some facilities to no longer be subject to TURA program requirements. This would be the case if a facility had previously met the 10,000 or 25,000 pound threshold due to using a combination of hexavalent and non-hexavalent compounds, but did not meet the threshold for either hexavalent (1,000 pounds under the HHS designation) or non-hexavalent (10,000 or 25,000 pounds under regular TURA reporting thresholds) compounds on their own. This scenario is unlikely, but possible. Similarly, it is possible that a facility currently reporting chromium compounds and using both trivalent and hexavalent forms, would be required to report each separately and pay an additional per chemical fee. The program is not aware of any facilities that will fit these scenarios.

Companies will also incur costs associated with TUR report and plan preparation, in the same manner and the same extent as discussed above concerning facilities filing for formaldehyde. Facilities will incur larger preparation costs the first time they file a Form-S and prepare a toxics plan, than they will in subsequent reporting and planning years. Once again, it's key to understanding the impact of TURA to note that companies are not required to implement specific TUR alternatives identified in their plan. Nor does coverage under TURA require that companies stop using chemicals that they deem important to their operations. The law requires that companies carefully track toxics use, respect the public's right to know about toxics use in the Commonwealth, and examine ways to reduce the use of chemicals that pose dangers to health, safety and the environment when they are used, stored, shipped, and incorporated into products. Doing so appears to be of general benefit, not just to the Commonwealth, but to the companies regulated by the Act.

D. Agricultural Impacts

Pursuant to MGL c. 30A, Section 18, state agencies must evaluate the impact of proposed programs on agricultural resources within the Commonwealth. The proposed revisions are intended to further reduce the use and release of toxic substances into the environment. Many of the toxic emissions that often are addressed in toxics use reduction plans are volatile organic compounds (VOCs) that contribute to the formation of ground-level ozone, which adversely affects vegetation and crops. Both formaldehyde and hexavalent chrome, incorporated as components of hazardous wastes and wastewaters, raise the potential for harm if mismanagement occurs. Therefore, this proposal is likely to have a positive impact on agricultural production to the extent that VOCs and the toxicity of wastes and wastewaters are reduced through toxics use reduction.

E. Impacts on Municipalities

Pursuant to Executive Order 145, state agencies must assess the fiscal impact of new regulations on the Commonwealth's municipalities. Municipalities are statutorily exempt from TURA and therefore the proposed amendments will have no direct effect on them. However, municipalities are likely to benefit from reduced pollution and associated risks to the extent the proposed amendments reduce the use of toxic substances in their jurisdictions.

F. MEPA

The proposed amendments are "categorically exempt" from the "Regulations Governing the Preparation of Environmental Impact Reports," 301 CMR 11.00, because the proposed amendments do not lessen the stringency of any environmental standards.